FINAL -SYNOPSIS OF THE Ph.D. THESIS

"ASSESSMENT OF THE EFFECT OF YOGA PRACTICE AND CONTROL OF HYPERTENSION AMONG THE KSRP IN KARNATAKA STATE"

Submitted to

MANGALORE UNIVERSITY

For the degree of

DOCTOR OF PHILOSOPHY

IN

YOGIC SCIENCE,

By

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(Reg No:(MU/EXB/Ph.D./CR.96/H.C.&Y.Sc./2020-21/E.13)

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FEBRUARY 2025

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Respected Sir,

Sub: Submission of Pre-Synopsis of the Proposed Ph.D. Thesis-Reg.

Ref: Fellowship order No: MU/ACC/Ph.D./CR.64/2018-19/A3
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ದಿನಾಂಕ 14.02.2023.

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With reference to the subject cited above, I am herewith submitting 14 copies of the final-Synopsis of the proposed Ph.D, thisis, titled “assessment of the effect of yoga practice and control of hypertension among the ksrp in Karnataka state” I kindly request you to consider and do the needful.

Thanking You

Yours Faithfully

(Mahesh Pandappa Lamani)

Place: Mangalagangothri-574199
Date: 28-02-2025

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TITLE OF THE THESIS

"ASSESSMENT OF THE EFFECT OF YOGA PRACTICE AND CONTROL OF HYPERTENSION AMONG THE KSRP IN KARNATAKA STATE"

Date of the Registration: 12/09/2019

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Chapter-1

INTRODUCTION

Where there is a health, there is happiness. Here the meaning of happiness is not the pleasure out of fulfilment of the desire but the jubilant feeling all the time that is free from fears and tensions. The primary objective of yoga is spiritual advancement and not to cure the diseases. However, it has been observed that many psychosomatic disorders are controlled best with the help of yoga practices and the persons who practice yoga regularly (Sadhana), can very well maintain their health, throughout their life. This indicates that the resistance power against the diseases i.e. immunity is improved due to the regular practice of yoga. The long-life span of the yoga practitioners also indicates that the yoga practice can slow down the aging process. Today, many people are taking best advantage of this preventive and promoting aspect of yoga. There however is a growing tendency to apply yogic methods as the last resort for each and every disease, irrespective of its severity, duration and the age of the patient. This is however a wrong concept of yoga therapy.

Man has conquered the diseases like Malaria, Typhoid, Small pox and Tuberculosis arising out of infections caused by germs, bacteria, Viri etc. But doctors and scientists have realized that in spite of good number of medicines, most sophisticated diagnostic tools and other medical facilities, it is difficult to cure the patients suffering from stress related disorders such as, Hypertension, Hyper-acidity, Insomnia, Heart diseases, Diabetes, Asthma, Arthritis, Spondylitis etc. with the conventional line of treatment. These disorders are even worse than usual infectious

disorders. The human being has been challenged by these germless disorders. The reason is we often ignore the causative factors of these diseases.

Purpose and Importance of the study

Hypertension is an intermittent or persistent elevation of the blood pressure. Systolic blood pressure above 140mmHg or diastolic blood pressure above 90mmHg. Hypertension has recently increased in incidence throughout the world. It is thought that the stresses of everyday life with a change in the dietary habits and lack of exercise has led to the increasing incidence of

hypertension. Previously hypertension was predominant only in industrialized and developed countries. However, of late there has been an increase in the number of cases in developing countries.

THE AIM OF YOGA

Maharshi Patanjali, in his *Yoga Sutra* enumerates the fivefold affliction (*klesas*) and nine obstacles (*viksepas*) as imperfections in the health of the body and in the state of mind.

"अविद्यास्मिता रागद्वेषाभिनिवेशाःक्लेशाः"||[10]

"व्याधिस्त्यानसंशयप्रमादालस्याविरतिभ्रान्तिदर्शनालब्धभूमिकत्वानवस्थितत्वानि

चित्तविक्षेपास्तेऽन्तरायाः"||[11]

The science of yoga begins with the philosophy of sorrow. It aims at the purification of body and mind and ends in emancipation. While explaining the effect of yoga, *Maharshi Patanjali* states by regular and devoted practice of the eight components of yoga the impurities of the practitioner's body, mind and intelligence are removed and the spiritual light or wisdom is bestowed.

AIM AND OBJECTIVE OF RESEARCH

Aim of the study

To study the Effect of Yogic practices on Hypertension in KSRP Police.

Objectives: -

- Research outcome will be given the knowledge about the benefits. Above the yogic practices.
- If one adopts yogic practices, he/she can able to destroy the impurities of the body and mind. And one can reduce hypertension and maintain the good health.
- If significant result obtained it will be the cost free and drug free method to keep the body healthy.

Diagnosis:

It is the most important aspect. Finding out the actual cause for the current problem and proper yogic interventions will be decided after diagnosis. Here, some experience is required. One has to look the current problem with yogic way than the modern methods. This is to ensure that, proper yogic interventions are being employed in the present research. Diagnosing can be done by using shadvimshati theory, pancakosa theory or tridosa theory. There is also the application of sadrasa and saptha dhatu and mala concept. By understanding these principal theories, proper yogic interventions, lifestyle modification are introduced to the subjects. To reach a healthy condition, following steps should be followed. Yoga helps to improve the physiological and psychological level of the individual.

PLANNING: -

Selection of groups: The research will be done by making two groups for the comparative study and to generalize the result that is obtained after the work. Viz. Experimental group and control group. In the former prescribed, yogic interventions will be given and in the later, they are kept under observations.

* Inclusion Criteria (including age, sex, medication, etc.)

- Age between 29-59 years
- Subjects having with hypertension

*Exclusion Criteria (including age, sex, medication, etc)

- Surgery done within 6 months.
- Sick (having savior health problems)

Lab experiments/tests: Bio-chemical test will be done to the subjects under consideration, tests like BP, BMI, lipid profile

Case taking: A detailed history of all the subjects under consideration will be noted carefully and good record is maintained to ensure the secrecy. This would be preliminary steps done before carrying out any research. Many aspects like-history of present, past illness, family

history, blood pressure, height, weight, lab investigations. This helps to identify the nature of the problem and severity.

Hypothesis

It is hypothesised that the practice of Yoga helps to enhance the Police staff's capacity to handle stressful situation and Control of Hypertension problem.

Null Hypothesis

we reject null hypothesis and concluded that average all types of Cholesterol levels before yoga is greater than all types of Cholesterol after yoga which confirms the effectiveness of yoga in reducing all types of Cholesterol.

Chapter-2

OVERVIEW OF HYPERTENSION

Hypertension is an intermittent or persistent elevation of the blood pressure. Systolic blood pressure above 140mmHg or diastolic blood pressure above 90mmHg. Hypertension has recently increased in incidence throughout the world. It is thought that the stresses of everyday life with a change in the dietary habits and lack of exercise has led to the increasing incidence of hypertension. Previously hypertension was predominant only in industrialized and developed countries. However of late there has been an increase in the number of cases in developing countries.

BLOOD PRESSURE:

Blood pressure is the force or pressure, which the blood exerts on the walls of the blood vessels. The systematic arterial blood pressure usually called simply arterial blood pressure is the result of the discharge of blood from the left ventricle into the already full aorta.

Systolic pressure: when the left ventricles contracts and pushes blood into the aorta the pressure produced within the arterial system is called the systolic blood pressure. In adults, it is about 120mmhg or 16kpa.

Diastolic pressure: when the heart is resting following the ejection of blood, the pressure within the arteries is called diastolic blood pressure. In an adult, this is bout 80mmHg or 11kPa. These figures vary according to the time of day, the posture, gender and age of the person. It increases with age and is usually higher in women than in men. In adult males, the average systolic pressure is 120-140 mmHg and an average diastolic pressure is 70-90 mmHg.

Blood pressure is measured by sphygmomanometer. It is usually expressed in the following manner B. P=120/80 mmHg. When the blood pressure exceeds the normal value then it is called as Hypertension and if it is less than normal value then that is called as Hypotension.

WHO DEFINED HYPERTENSION

WHO (2012) estimated that One in three adults worldwide are affected with raised blood pressure – a condition that causes around half of all deaths from stroke and heart disease. This report is further evidence of the dramatic increase in the conditions that trigger heart disease and other chronic illnesses, particularly in low - and middle-income countries**.**

WHO (2013) stated that in Worldwide, high blood pressure is estimated to affect more than one in three adults aged 25 and over, or about one billion people. The theme of the World Health Day 2013 is "Measure your Blood pressure, reduce your risk" for calling for intensified efforts to prevent and control Hypertension**.**

As per WHO health does not mean merely an absence of disease but a jubilant feeling of wellbeing at physical, mental, social and spiritual levels According to Ayurveda too the same message is seen:

समदोष समाग्निश्च समधातुः मलः क्रियाः ।

प्रसन्नात्मेंद्रियमनः स्वस्थ इत्यभिधीयते ||

HISTORICAL ASPECTS

Survey of the therapeutic research

Swami Kuvalayananda was the pioneer to investigate the effects of yogic practices on the scientific basis. These were the fundamental experiments in the field of yoga. Later on many scientists conducted the scientific researches in yoga. The applied research in the field of therapy was mostly carried out in the last 4 to 5 decades. Bhole, (1967 and 1979) revealed that Asthma could be controlled successfully in 69% patients with the yogic treatment in which vastra dhauti was found very effective. Datey, (1969) for the first time found the relaxative posture - shavasana as most effective for the management of hypertension. Later on, Deshmukh, Dalvi, Vinekar, (1969), Patel, (1973) and Udupa (1980), not only confirmed these results but also further reported a reduction in catecholamine level after yogic therapy. *Rajalaxmi also could treat 20 patients of hypertension effectively with Yoga**.** Gopal, (1973) has reported a significant improvement in blood pressure and respiratory functions after practicing yoga.* Rajalaxmi treated 15 patients of bronchial Asthma with yogic treatment for 20 to 90 days and found that their vital capacity, PEFR and breath holding time was increased. On the basis of these investigations it seems that yoga helps asthmatics by improving their broncho-pulmonary functions and different respiratory capacities. It is also noticed that yoga therapy helps in removing the mental and emotional instability and establishes the balance in hormonal secretions. Parkodi, *(1979) found that Shavasana practiced for 5 months could reduce blood*

pressure and catacholamine metabolism and improved adreno-cortical function. Tulpule, (1980) showed that a set of relaxative

hathayogic postures could prevent myocardial infarction. *Gore (1980) found that the air trapping observed in the spirogram of asthma patients was effectively removed immediately after practicing Vastra dhauti. Sharma, (1981) treated 27 patients of hypertension with shavasana for 2.5 months successfully PEFR of normal subjects was found to improve significantly after 45 days yogic training (Gore, 1981).* Gore (1982) found that one-month yogic training could improve pulmonary functions of asthmatics.

Diabetes mellitus is another stress disorder where the number of patients is increasing day by day. After Udupa. and Singh*, (1972) reported significant reduction in blood sugar in normal subjects, many doctors came forward to conduct scientific studies on yogic treatment for diabetes. Koshti,* (1972) studied serum proteins in diabetics before and after 6 weeks yogic treatment and found that A:G ratic was corrected along with the reduction in blood sugar. Melkote and Varandani, (1973) also reported promising results of yogic treatment for diabetes. Rugmini and Sinha, (1975) investigated 123 diabetics and found the yogic treatment effective in 64% patients. Gore, (1988) emphasized 15 min shavasana for two times along with other yoga postures for 45 days and found reduction in insulin intake from 44 units to 24 units.

Besides this, yoga therapy was also tried in other clinical conditions such as Neuroticism (Kocher, 1972), Obesity (Gharote, 1977), Insomnia (Joshi, 1979), Mental retardation (Rajalaxmi, 1979), Epilepsy (Parkodi, 1984), Udupa, Singh, 1984) and showed encouraging results. There was a comparative study on the effect of Yoga and Aerobics on obesity with 6 months follow up observations

at Kaivalyadhama institute. The study revealed that yoga training was better in improving the level of health-related fitness of obese patients in terms of reduced body weight and fat%, flexibility, hip girth and muscular strength (Bera, 2003). *Both yoga as well as the aerobics training has beneficial effect towards reducing their blood pressure and heart rate in the age group of 35 to 60 years.* The yogic treatment was more effective in case of residential group where diet regulation was also followed. Yoga was seen more effective in improving the respiratory efficiency than the aerobic exercise. The cardio-respiratory effect of yoga is long

lasting and deeper as compared to aerobics (Gore 2004). Yoga regimen in residential group was found better than aerobic exercise in reducing anxiety in obese people (Bhogal and Oak 2005). Recently in Vivekananda Yoga Kendra, 18 patients of anxiety neurosis were treated with yoga therapy for 4 weeks. More emphasis was given on Pranayama and Shavasana. Increase in GSR, decrease in RR, increase in BHT and CE as well as, psychological status of the patients were observed. A sense of well-being and deeper relaxation was felt by all the patients. *Udupa studied effect of yoga therapy for anxiety neurosis and has observed improvement after 3 months together with a reduction in the levels of acetylcholine and catecholamine in blood and urine*. Wahia, after 6 weeks yogic treatment including meditation, has reported an improvement in 68% patients. Several studies have been reported on the yogic treatment for effective control of spondylitis, backache, arthritis, rheumatism, menstrual disorders and gastrointestinal disorders. Since 1991, Yoga has been included in the rehabilitation program of the mentally challenged patients of the Govt. Mental hospitals at Thane and Nagpur.

For the individuals suffering from Psychotic and neurotic depression the results are encouraging such as reduction in restlessness, mental irritation and negative thinking. An improvement in mental concentration, sleep pattern and positive attitude was also observed after the practice of selected asanas, Anuloma viloma and Bhramari pranayama, Om recitation and Dhyana. Om recitation has been found to be the powerful psycho-physiological technique for calming and relaxing the mind (Bhogal, 1993 and Gore, 1997). Dean Ornish has proved that the heart diseases can be reversed and the bypass surgeries may be avoided when the patients follow the yogic life style. Improvement in cardiovascular efficiency due to one month yoga training was long back reported by Ganguly and Gharote, (1977). All these studies reveal that the yogic therapy has got a definite potential to heal the patients suffering from psychosomatic disorders due to its integrated approach.

ANATOMY AND PHYSIOLOGY

Hypertension is also known as high blood pressure, when blood is flowing through the arteries or veins there is a natural pressure which is known as blood pressure. (Lateral pressure on the walls of vessels.) There is a physiological variation in the normal blood pressure. If high blood pressure persists for long time there are adverse effects on heart, kidney and brain. Hence care should be taken in cases of high blood pressure.

hypertension is not a disease in itself, but a sign that there are underlying problems in the management of the internal environment and balance of the body at the physical, emotional and mental levels. It is tension of the whole body and mind complex, resulting in imbalance of the nervous system.

DEFINITION:

Persistent increase in systemic arterial blood pressure is known as hypertension. Hypertension is divided into two types namely,

1. Primary hypertension

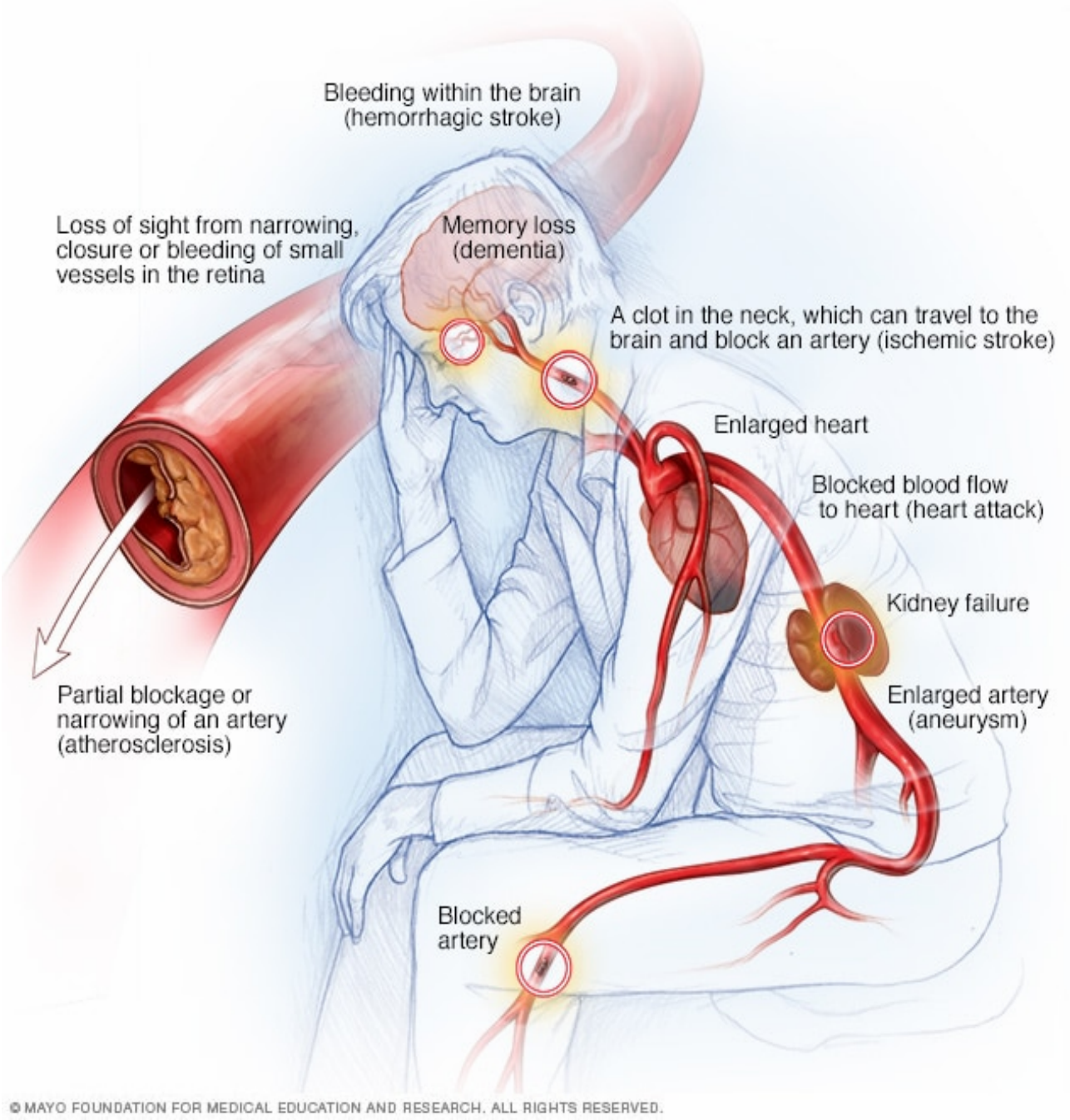
2. Secondary hypertension

Blood pressure (B.P) is the force exerted by the blood vessels against its walls during circulation. It has a range of measurement that is normal, high and low. It is measured in the unit of mm of Hg. The greater pressure, the harder heart has to work.

- Normal blood pressure: 120/80 mmHg.
- High blood pressure (stage 1) 140/90 mmHg.
- High blood pressure (stage 2)160/100 mmHg.

Primary or essential hypertension is the blood pressure that is elevated in the absences any under lying diseases. It has no identifiable causes.

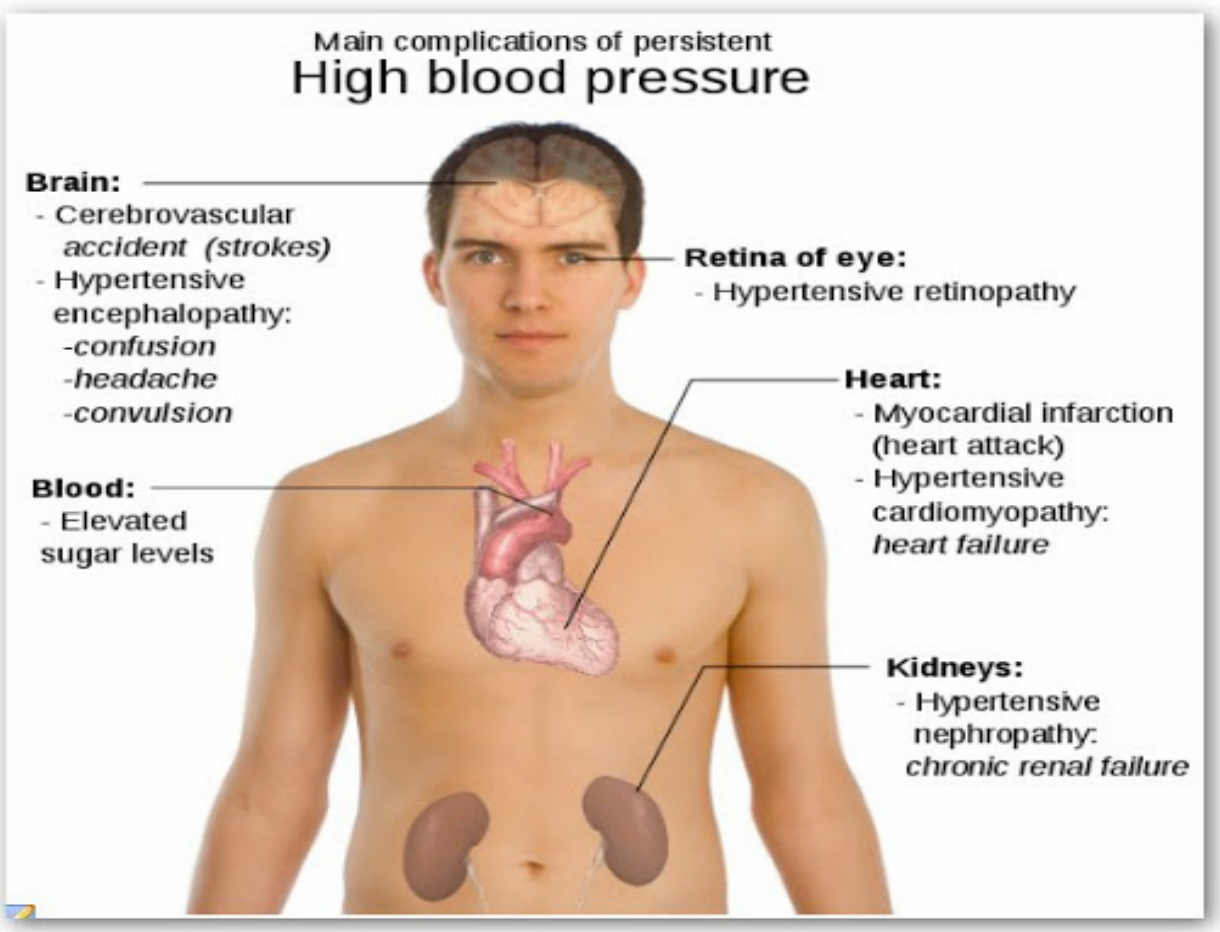
High blood pressure is a risk factor for more than heart disease. Discover what complications high blood pressure can cause.



COMPLICATIONS: (RISK FACTORS)

- **Heart diseases:** the heart as it becomes more and more strained, increases in size, damaging its internal components such as the valves. The heart also becomes more prone to heart attack as higher blood pressure is associated with hardening of the arteries.
- **The brain:** oxygen supply to the brain is reduced so that it cannot function at optimum level.

- **The eyes:** blurring of the vision and sudden, progressive loss of vision or other defects.
- **Kidney:** dysfunction occurs which may result in the inability to build up and death can result.
- **Damage to the arteries** Healthy arteries are flexible, strong and elastic. Their inner lining is smooth so that blood flows freely, supplying vital organs and tissues with nutrients and oxygen.



High blood pressure can cause many heart problems, including:

- **Coronary artery disease.** Arteries narrowed and damaged by high blood pressure have trouble supplying blood to the heart. Too little blood flow to the heart can lead to chest pain (angina), irregular heart rhythms (arrhythmias) or a heart attack.

- **Enlarged left heart.** High blood pressure forces the heart to work harder to pump blood to the rest of the body. This causes the lower left heart chamber (left ventricle) to thicken. A thickened left ventricle increases the risk of heart attack, heart failure and sudden cardiac death.
- **Heart failure.** Over time, the strain on the heart caused by high blood pressure can cause the heart muscle to weaken and work less efficiently. Eventually, the overwhelmed heart begins to fail.
- **High Risk Factors:**

❖ A diet high in saturated fat
❖ Excessive salt consumption
❖ Overweight and obesity
❖ A sedentary lifestyle and lack of exercise
❖ Excessive alcohol consumption
❖ Smoking
❖ Un-managed stress
❖ A family history of high blood pressure
❖ Being over 65 years of age
❖ Co-morbidities such as diabetes

CAUSES (OTHER CAUSES)

- Above 40 Years.
- Obesity.
- Intake of contraception.
- A high fat consumes.
- Stress at work and in the daily life.
- Smoking.
- Over-weight.
- Lack of exercise.
- Sympathetic nervous system dysfunction and other hyper reactivity.
- Environmental factors
- Stress and strain

- Emotional disturbances
- Heredity
- Race
- Geographical location
- Obesity
- High fat or high sodium diet in genetically susceptible individuals.

Secondary hypertension is related to an underlying disease process such as,

- Parenchymal disorders
- Renal artery disease
- Endocrine and metabolic disorders
- Central nervous system disorders
- Narrowing of the aorta
- Pregnancy
- Alcoholism
- Blocks in blood vessels at the time of birth. To overcome these blocks more pressure has to be generated.
- Malfunctioning of pituitary gland in the brain
- Over activity or under activity of the thyroid gland.
- Blockages in Renal vasculature.
- Excess secretion of adrenal hormones.
- Cushing's syndrome
- Kidney disorders
- Use of medications, drugs or other chemicals.
- Oral contraceptives
- Hemolytic-uremic syndrome

SYMPTOMS:

Usually, no symptoms are present. Occasionally the person may experience a mild headache. If the headache is severe of if the person experience any of the symptom below the person must

consult a doctor. These may be a sign of dangerously high blood pressure called malignant hypertension or a complication from high blood pressure

- Tiredness
- Confusion
- Vision changes
- Angina-like chest pain
- Heart failure
- Blood in urine
- Nose bleed
- Irregular heart beat
- Ear noise or buzzing

INVESTIGATIONS FOR HYPERTENSION:

- Radiological investigations
- Ambulatory BP reading
- Chest X-rays
- Fasting lipid profile test
- Renal ultra sound
- Plasma rennin activity and aldosterone
- Physical examination

Continued uncontrolled elevated blood pressure for long periods is harmful and ultimately may prove disastrous as it seriously damages important organs like the brain and the heart.

TREATMENT OR MANAGEMENT OF HYPERTENSION:

The aim of treatment is to reduce blood pressure to a level where there is decreased risk of complications. Treatment may give at home with close supervision by the health care provider or it may be given in the hospital.

1. Medication may include:

- Diuretics.
- Beta-blockers
- Calcium channel blockers
- Angiotensin-converting enzyme (ACE) inhibitors
- Angiotensin receptor blockers (ARBs) or alpha blockers

2. Medications such as,

- Hydralazine
- Minoxidil
- Diazoxide or nitroprusside (may be required if the blood pressure is high)

A hypertensive person should take these drugs with proper dose only under the supervision of a prescribed physician.

Life style changes may reduce high blood pressure by weight loss, modifying the risk factor, exercise and relaxation and dietary adjustments.

How to manage high blood pressure

- ✓ Eating a healthy diet
- ✓ Reducing salt intake
- ✓ Exercising regularly
- ✓ Stopping smoking
- ✓ Reducing alcohol consumption
- ✓ Managing stress
- ✓ Having regular blood pressure checks
- ✓ Reducing salt consume.
- ✓ Reduction of fat consume, and especially of saturated fat consume.
- ✓ Weight reduction.
- ✓ Relaxing and stress reduction techniques, for example meditation and autogenic training.
- ✓ Regular ,Asana, Pranayama, Meditation, Relaxation, yoga exercise.

Chapter-3

REVIEW OF LITERATURE:

3.1 Hypertension

I have Reviewed 36 Papers on Hypertension.

Empirical literature on Hypertension is presented here under the following headings as

3.1.1 Magnitude of the problem

WHO (2013) stated that in Worldwide, high blood pressure is estimated to affect more than one in three adults aged 25 and over, or about one billion people. The theme of the World Health Day 2013 is "Measure your Blood pressure, reduce your risk" for calling for intensified efforts to prevent and control Hypertension[1].

WHO (2012) estimated that One in three adults worldwide are affected with raised blood pressure – a condition that causes around half of all deaths from stroke and heart disease. This report is further evidence of the dramatic increase in the conditions that trigger heart disease and other chronic illnesses, particularly in low - and middle-income countries [2].

Pal et al., conducted a study to assess the nature of sympathy agal imbalance (SVI) in prehypertensive by short-term analysis of heart rate variability(HRV) to understand the alteration in autonomic modulation and the contribution of BMI to SVI in the genesis of prehypertension. Body mass index (BMI), basal heart rate (BHR), blood pressure (BP), rate pressure product (RPP) and HRV indices are measured. The results in three groups of subjects revealed that normotensive having normal BMI (Group 1), prehypertensive having normal BMI (Group 2) and prehypertensive having higher BMI (Group 3). SVI was assessed from LF-HF ratio-and correlated with BMI, BHR, BP and RPP in all the groups by Pearson correlation. . It was advised that life-style modifications such as yoga and exercise-would enable achieve the sympathovagal balance and blood pressure homeostasis inprehypertensives [3].

WHO (2011)studied the prevalence of Hypertension in India. Theprevalence of Hypertension was found among 33.2% males and 31.7% females and totally 32.5%. It also states that 9.9% males and 12.2% females and totally 11% are in overweight category. Moreover, regarding Raised cholesterol 25.8% males,28.3% females and 27.1% total population [4].

Dutta A and Ray MR studied the prevalence of hypertension, prehypertension and tachycardia among the women in rural areas of West Bengal, identify co-factors associated with the prevalence and contribute to the body of evidence for future health programs to identify at-risk groups. A population-based cross-sectional study was conducted among 1186 remote women

participants, aged18 years or more. They were interviewed using standard structured questionnaire. For each participant, two blood pressure measurements with an interval of 48 hours .Overall prevalence of hypertension in the study subjects was 24.7% and that of pre-hypertension and tachycardia was 40.8% and 6.4%, respectively. Both hypertension and pre-hypertension were seen to increase with age. Other identified significant factors were use of biomass fuel for cooking, absence of separate kitchen,higher body mass index (BMI), education and average family income [5].

Biswas M and Manna CK conducted a cross-sectional, community-based survey to investigate the prevalence of hypertension among the members of the households of the Scheduled Caste community of three selected villages in DistrictNadia, West Bengal, India, in individuals aged 20-70 years. Prevalence ofprehypertension, hypertension, ISH and IDH in the study population was 19.28%,17.93%, 8.07% and 6.72%, respectively. There was a significant development ofhypertension with increasing age ($p<0.001$). Males (19.26%) showed a higherhypertensive rate than females (16.66%); however, this was not significant. In thethree increasing body mass index (BMI) groups (<19.9, 20-24.9 and _25 kg/m2), thepercentages of patients with hypertension were 19.27%, 23.23% and 29.62%,respectively. Hypertension was higher in the waist hip ratio (WHR) group of0.90-0.99 (hypertension = 23.12%) than the WHR group of 0.80-0.89(hypertension=7.89%). BMI and WHR were significantly higher ($p<0.001$) in thehypertensive group compared with the non-hypertensive group [6].

Tsugane S et al.,quoted the attributable factors and hazard ratiosassociated with BP in relation to stroke and CHD. A total of 943 stroke events, 182CHD events, 262 stroke deaths and 120 CHD deaths occurred between the baselinequestionnaire. BP levels were linearly associated with incidence and mortality ofCVD in men and women. The contribution of normal BP, high normal BP and mildHypertension to the occurrence of stroke events were greater than those made bymoderate and severe Hypertension, highlighting the importance of primaryprevention and treatment of low- to- moderate degrees of Hypertension [7].

WHOstudied the prevalence of Hypertension in India, in the study groupaged 20 -60 yrs. The prevalence of Hypertension was 59.5 and 69.9 per 1000 inmales and females respectively in the urban population and 35.5 and 35.9 per 1000in males and females respectively in the rural population [8].

Sampatti ST et al., conducted a community-based cross-sectional study tofind out prevalence of hypertension in rural areas of Maharashtra. The subjects were1297 persons aged 19 years and above. A house-to-house survey was conducted andinterviewed the participants by systematic random sampling method, using pretestedstructured standard questionnaire. Two independent blood pressure (BP) readingswere taken in sitting position by visiting each participant at their home. Overallprevalence of hypertension in the study subjects was 7.24%. Multiple logisticregression analysis identified various factors significantly associated withhypertension were age, sex, BMI, additional salt intake, smoking, DM, alcoholconsumption, and higher socioeconomic status. The overall prevalence ofhypertension in study subjects was 7.24% [9].

3.2.1.2 Diagnosis of hypertension

Hasumi, Takahiro et al.,carried out a study to evaluate the age-specific,sex-specific, and race-specific prevalence of hypertension among 59, 227 adults(ages 18 and older) South African adults. The weighted prevalence of self-reporteddiagnosis of hypertension by a health professional was 10.4%. The prevalence ofhypertension increased significantly with age for both men and women. In total,94% of those reporting a diagnosis of hypertension reported taking antihypertensivemedications. The study concluded that there is a significant burden fromhypertension in South Africa, especially as the under-diagnosis of hypertension [10].

Alonso A et al.explained the association between alcohol consumption,including the preferential order of alcoholic beverage and the frequency ofconsumption per week, and the risk of Hypertension in a Mediterranean cohort. Selfreporteddata on Hypertension diagnoses were collected, 554 incident cases ofHypertension were identified over a total of 43,562 per year. The consumption ofbeer was associated with risk of Hypertension. However the weekly pattern ofalcohol consumption did not have a significant impact on the risk of Hypertension[11].

National Health and Nutrition Survey division (2008)examined whetherHypertension is associated with CVD mortality risk and whether the association ofBP with CVD outcome is by social demographics or Hypertension treatment andcontrol. Data collected from the Third National Health and Nutrition ExaminationSurvey through 2000 were used to estimate the relative risk of death from CVDHypertension. The study suggested a strong, significant association of elevated BPwith CVD mortality risk, particularly among persons aged < 65 years.

Treatmentand control of Hypertension eliminated the excess CVD mortality risk observedamong the hypertension population [12].

Jacks H et al., explained the prevalence of anxiety symptoms, anxietydisorder or specified anxiety disorders in adults aged > 60 in either Community orclinical settings was done . Study concluded that anxiety disorder, particularlyGeneralised Anxiety Disorder was common and issue related to Co morbidity andthe nature of anxiety in old age remained unresolved. This hampered the design ofIntervention Programmes and highlighted the need for further research with a primary focus on anxiety [13].

3.2.2 Complimentary/ Alternative Medicine (CAM)

3.2.2.1 Effect of Yoga on Blood pressure

Deepa T. et al.conducted a study to evaluate the Effect of yoga andmeditation on 15 mild to moderate essential hypertensives treated withantihypertensive drugs along with yoganidra. The study showed a significant fall ofmean blood pressure after 3 months of yoganidra ($p < 0.01$) [14].

Naik Aconducted a study to evaluate the effect of left nostril breathingon 30 hypertensive patients to evaluate the heart rate and blood pressure. The resultshowed that the mean pulse rate dropped from 84.73 ± 1.89 per minute to 81.80 ±1.84per minute. Systolic blood pressure dropped from 144.50 ± 3.68 mmHg to133.83 ± 3.66 mmHg. Diastolic blood pressure dropped from 100.96 ± 2.48 mmHgto 94.83 ± 2.41 mmHg [15].

Chanda Rajak et al.assessed whether regular practice of Yoga for sixmonths can reduce the cardiovascular hyper-reactivity induced by cold pressor test.The study group comprised 75 healthy subjects of 25-45 years age group. Initiallythere were 27 hyperreactors to cold pressor test. The hyper-reactivity of 22volunteers converted to hypo-reactivity after the yoga therapy of six months(81.48%). Other parameters like basal blood pressure, rise in blood pressure, pulserate and rate of respiration were also statistically significantly reduced [16].

Bhavanani, AB et al., assessed the immediate effect of Immediate effect ofsukha pranayama on cardiovascular variables among 23 patients with hypertensionand instructed to perform sukha pranayama for 5 minutes at the rate of 6breaths/min. The results revealed a significant ($p < .05$) reduction in HR and ahighly significant ($p < .001$) reduction in systolic pressure, pulse pressure,

meanarterial pressure, rate-pressure product, and double product with an insignificant fallin diastolic pressure [17].

3.2.2.2 Studies related to Yoga and BMI

Soubia Malik et al. observed the effect of BMI, BMR, Waistcircumference and Waist to hip ratio on Blood pressure. This was a descriptivecross-sectional study involving 100 respondents (93% non-married) selected fromKarachi and sample type is stratified random sampling, stratum is based on age i.e.20-30 years. The findings proved that increased BMI raises the systolic pressure &diastolic pressure; the same results are obtained for WHR, Waist circumference andBMR, as these are directly related to BMI [18].

Alyson R et al., studied the relationship between yoga practice and health(subjective well-being, diet, BMI, smoking, alcohol/caffeine consumption, sleep,fatigue, social support, mindfulness, and physical activity). Cross-sectional,anonymous internet surveys distributed to 4307 randomly selected from 18,160individuals at 15 US Iyengar yoga studios; 1045 (24.3%) surveys completed. Theresults revealed that the Mean age 51.7 (±11.7) years; 84.2% female. Frequency ofhome practice favorably predicted (P <.001): mindfulness, subjective well-being,BMI, fruit and vegetable consumption, vegetarian status, sleep, and fatigue. Eachcomponent of yoga practice (different categories of physical poses, breath work,meditation, philosophy study) predicted at least 1 health outcome (P <.05). Homepractice of yoga predicted health better than years of practice or class frequency.Different physical poses and yoga techniques may have unique health benefits [19].

Speroni KG et al. carried out a study to determine its effect on decreasingbody mass index (BMI) in nurse participants by administering the hospital-basedNurses Living Fit (NLF) intervention. The NLF intervention included exercise (12weekly sessions), yoga and nutrition (4 monthly sessions), and diary completion(exercise/yoga, food/water consumption, and sleep), addressing healthy lifestyleprinciples. NLF participants experienced a greater mean reduction in BMI and waistcircumference inches. The study concluded that Provision of an evidence-basedprogram such as NLF facilitates nurse education on healthy lifestyleprinciples [20].

Braun TD et al. carried out a study to determine the increasing prevalenceof overweight and obesity in humans in the United States. Thirty-sevenoverweight/obese program participants (age 32-65, BMI<25) were undergone a5-day residential weight loss program, which was

multifaceted and based on Kripaluyoga, on health behaviors, weight loss, and psychological well-being inoverweight/obese individuals. Self-report weight loss at 1 year (n = 19, 51%retention) was significant. The study concluded that a Kripalu yoga-based,residential weight loss program may foster psychological well-being and weightloss [21].

3.2.2.3 Studies related to Yoga and Cholesterol

Mizuno J & Monteiro HL., conducted a quasi-experimental studydescribes the effects of a yoga sequence following hemodynamic and biochemicalparameters in patients with hypertension. Thirty-three volunteers participated in thestudy (control = 16 and yoga = 17) for four months. Blood pressure measurements,cardiac and respiratory rate were collected monthly, while the biochemical profilewas taken at the beginning and end of the program. The yoga group showed asignificant reduction of systolic blood pressure, heart and respiratory rate ($p < 0.05$).As for the biochemical profile, the yoga group showed correlation coefficientsbetween initial values and final responses greater than the control of fasting glucose,total cholesterol, LDL-cholesterol and triglycerides [22].

Madanmohan assessed the effect of yoga therapy on reaction time,biochemical parameters and wellness score of 15 peri and post-menopausal diabeticpatients. A comprehensive yoga therapy program comprising of three times a weeksessions for six weeks was conducted. Yoga training reduced auditory reaction time(ART) from right as well as left hand, the decrease being statistically significant($P<0.05$) for ART from the right hand. There was a significant ($P<0.01$) decrease infasting and postprandial blood glucose levels as well as low density lipoprotein. Thedecrease in total cholesterol, triglycerides, and very low density lipoprotein andincrease in high density lipoprotein was also statistically significant ($P<0.05$). Allthe lipid ratios showed desirable improvement with a decrease ($P<0.01$) of TC/HDLand LDL/HDL ratios and increase ($P<0.05$) in the HDL/LDL ratio [23].

Okonta NR carried out a evidence-based integrative research review thatvalidates yoga therapy as an effective complementary treatment in the managementof high blood pressure (BP). The review was conducted with a search ofcomputerized databases such as OVID, Academic Search Premier, CINAHL,MEDLINE, and Health Source: Nursing/Academic edition, PsychINFO, as well asreliable Web sites such as the cdc.gov, among others. An integrative review searchwas conducted, and 10 studies met the inclusion criteria. They include acombination of randomized

controlled trials, quasi-experimental studies, and pilotstudies. Yoga therapy is a multifunctional exercise modality with numerous benefits.Not only does yoga reduce high BP but it has also been demonstrated to effectivelyreduce blood glucose level, cholesterol level, and body weight, major problemsaffecting the American society. The completed integrative review providesguidelines for nursing implementation as a complementary treatment ofhigh BP [24].

Manchanda SC et.al., conducted a prospective, randomised, controlledtrial of 42 men with angiographically proven coronary obstructive disease wererandomized to control (n=21) and yoga intervention group (n=21) and werefollowed for 1 year. The subjects were taught various yogic exercises at yoga centrewhich they later practiced everyday at home. The control group was managed byconventional methods. The results revealed that at the end of 1 year, the yoga groupsshowed significant improvement in number of anginal episodes, improved exercisecapacity and decrease in body weight, and total and LDL cholesterol and serumtriglyceride levels as compared to controls. Coronary angiography repeated at 1 yearshowed that significantly more lesions regressed (20% versus 2% and less lesionprogressed (5% versus 37%) in the yoga group (chi-square = 24.9; P<0.0001).Revascularisation procedures (coronary angioplasty or bypass surgery) were muchless frequent in the yoga group (1 versus 8 patients; relative risk 5.45; P=0.01).The compliance of the total programme was excellent and no side effects wereobserved [25].

3.2.2.4 Studies related to yoga and Anxiety

Sheng-Chia Chung et al., conducted a prospective observational cohortstudy on Sixty-seven (67) participants in the meditation group and 62 participants inthe control group. At baseline, the meditation group had higher quality of life (P <0.001) than controls but similar anxiety level (P = 0.74) to controls. Within-grouppre-versus post-treatment comparisons showed significant improvement in quality oflife, anxiety, and blood pressure in the meditation group (P < 0.001), while incontrols, quality of life deteriorated and there was no improvement in bloodpressure. The improvement in quality of life, anxiety reduction, and blood pressurecontrol was greater in the meditation group [26].

Khuwaja AK et al., carried out a study aimed to assess the prevalence ofanxiety and depression and to identify their associated factors including metaboliccomponents among people with type 2 diabetes. A cross-sectional, multi-centerstudy of 889 adults with type-2 diabetes were included in

this study. Anxiety anddepression were measured by using the Hospital Anxiety and Depression Scale(HADS). Overall, 57.9% (95% CI = 54.7%, 61.2%) and 43.5% (95% CI = 40.3%,46.8%) study participants had anxiety and depression respectively. Factors found tobe independently associated with anxiety were physical inactivity, havinghypertension and ischemic heart disease. For depression, being female, of older age,having hypertension and ischemic heart disease were significantly associated [27].

Han L conducted a case control study on depression and anxiety in Hypertensive patients. Participants older than 35 years including both hypertensive patients and healthy controls were randomly selected in 2 communities through health Behaviour Survey. The results showed that depression and anxiety were possibly associated with Hypertension and more attention has to be paid to the mental health situation of Hypertensive patients in order to improve their quality of life [28].

Mykletun S et al., studied on the effect of Anxiety on Blood pressure. 36,350 men and women aged 20– 78 yrs participated in the change in symptomlevel of Anxiety and Depression between baseline and follow-up was Inverselyassociated with change in Systolic Blood Pressure. For Diastolic Blood Pressure, thefindings were weaker or non-significant. Symptoms of anxiety and depressionpredicted lower Blood Pressure 11 years later [29].

3.2.2.5 Studies related to Yoga and Stress

Huang Fu-Jung et.al., studied the efficacy of a single-session Hathayoga class on stress reduction . It was a quasi experimental design and recruited 63female community residents in New Taipei City aged 40–60 years. Theexperimental group (n=30) received the 8-week Hatha yoga course. The controlgroup (n=33) received no intervention. The Perceived Stress Scale (PSS) and heartrate variability (HRV) assessed stress reduction effectiveness. It showed thatParticipation in a single 90-minute Hatha yoga class can significantly reduceperceived stress than the control group [30].

Smith C et al., compared yoga and relaxation as treatment modalities at10 and 16 weeks from study baseline to determine if either of modality reducessubject stress, anxiety, blood pressure and improve quality of life. A randomisedcomparative trial of one hundred and thirty-one subjects with mild to moderatelevels of stress were recruited from the community in South Australia. Ten weekly1-h sessions of relaxation or hatha yoga. Changes in the State Trait

PersonalityInventory sub-scale anxiety, General Health Questionnaire and the Short Form-36.Following the 10 week intervention stress, anxiety and quality of life scoresimproved over time. Yoga was found to be as effective as relaxation in reducingstress, anxiety and improving health status on seven domains of the SF-36 [31].

West J et al., quoted a study on the effect of of Hatha yoga and Africandance on perceived stress. Sixty-nine healthy college students participated in one ofthree 90-min classes: African dance (n = 21), Hatha yoga (n = 18), or a biologylecture as a control session (n = 30). Before and after each condition participantscompleted the Perceived Stress Scale (PSS), There were significant reductions inPSS (P <.0001) such that African dance and Hatha yoga showed significantdeclines, whereas there was no significant change in biology lecture [32].

Joseph Keawe et al., studied the association of the racism and the physical health of 146 native U.S. populations despite their high risk for stress related disorders. Height, weight, blood pressure, and salivary cortisol samples (AM and PM) were collected and analysed. BMI, age, sex, marital status, education level, general psychological stress, and ethnic identity were associated. The results indicated that Native Hawaiians reporting more attributed racism had significantly(P\.05) lower average cortisol levels than those reporting less attributed racism, after adjusting for socio-demographic, biological, and psychosocial confounders [33].

3.2.2.6 Studies related to Hypertension and Need based education

Aekplakorn et al. explained the changes in prevalence, awareness,treatment and control of hypertension and their metabolic risk factors in Thaipopulation between 2004 and 2009 conducted by Thai National Health ExaminationSurvey (NHES). Blood pressure and anthropometric measurements were assessed.The prevalence of hypertension in 2004 and 2009 were relatively stable atapproximately 21.0%. There was improvement in awareness of hypertension, from18.2% for men and 33.0% for women in 2004 to 39.5 and 59.4% in 2009,respectively. The high blood pressure control rates improved from 4.8 to 14.4% formen and from 10.8 to 27.2% for women, respectively (P<0.05). Strengtheningmeasures to control high blood pressure and metabolic risk factors, especiallyobesity and hypercholesterolemia, inindividuals with hypertension areneeded [34].

Proper KI et al., investigated the effectiveness of an individual counselling intervention at the workplace on physical activity fitness and health. Counselingcontent derived from the Patient-

centered Assessment and Counseling for Exerciseand Nutrition (PACE) program. A total of 299 were randomly allocated intointervention (n =131) and control group (n =168). Over a 9-month period,intervention group subjects were offered seven counseling sessions. Secondaryoutcome measures were body composition (body mass index [BMI], and percentageof body fat measured via skinfold thicknesses); blood pressure; and bloodcholesterol. There were significant positive effects on total energy expenditure,physical activity during sports, cardiorespiratory fitness, percentage of body fat, andblood cholesterol. Individual face-to-face counseling at the workplace based onPACE protocols positively influenced physical activity levels and some componentsof physical fitness. The implementation of workplace counseling programs forindividuals should therefore be promoted [35].

Rafique G and Khuwaja AK carried out a Cross-sectional, analytical studyto determine the frequencies of diabetes, hypertension and their established lifestyle-risk factors and to assess the level of awareness about diabetes and hypertension-amongst persons attending a health mela at the Aga Khan University Hospital(AKUH), Karachi. Height, weight, blood pressure and random blood glucose were-measured for 264 participants. Frequency of diabetes and hypertension in both men-and women increased with increasing age ($P<0.001$) and body mass index ($P=0.02$).Diabetes and hypertension were correctly defined by 52% and 37% subjects-respectively and this was significantly associated with educational level ($P=.001$).Lack of physical exercise was observed in 59% participants, while 53.6% men and67.5% women were overweight/obese. Emphasis on health education is needed to-increase public awareness of the warning signs and risk factors of these common-conditions [36].

Chapter-4

MATERIAL AND METHODS:

The Research design adopted for the study is experimental in nature. The subjects were divided into two groups, experimental and control group, consisting of 100 members in each group. The yogic therapy was given to experimental group and control group have daily Ruthin KSRP pared, their results were compared with control group. Daily sessions of classes were taken in the morning for one and half hour from 6.00 AM to 7.30 AM. The Yogic practice includes a

series of Asana, Pranayama, and Meditation and followed by the relaxation method of Yoga Nidra. Asanas were carried for 30 minutes, Pranayama for 20 minutes, Meditation for 10 minutes and Yoga Nidra for 30 minutes. Before starting the yoga practice, the case histories of the subjects were taken and at the end of 45 days the individual improvement were noted.

The blood pressure of the subjects was recorded using sphygmomanometer and that has been done in pre and post manner. I.e., before starting the practice of yoga and after 45 days practice of yoga.

The blood pressure was recorded in the supine position. In order to prevent the variation of blood pressure with time, the readings were taken at the same time Lipid profile blood sample i.e. In between 6a.m to 7.30 a.m. To prevent the instrumental error, the B.P readings were noted using the same instrument throughout the study. The weight of the subjects was measured by using a weighting machine before and after the study.

PARAMETERS FOR THE DATA COLLECTION:

The following parameters were undertaken for the study.

Lipid Profile: Patients were asked to undergo Lipid profile test in empty stomach to determine their cholesterol levels before and after the 40 days training program. The test mainly includes Total Cholesterol, triglyceride, HDL; LDL; VLDL Cholesterol levels.

Blood Pressure: The blood pressure of the subjects was recorded using Sphygmomanometer, before and after the experiment. It was done to know the changes that were brought after the yoga therapy. The B.P was recorded in the supine position in order to prevent the variation of

B.P. The B.P readings were taken at the same time (i.e., before and after the experiment). For the two readings (i.e., before and after the experiment) to prevent the instrument error the B.P reordering done using the same instrument throughout the study.

Systolic pressure: when the left ventricles contracts and pushes blood into the aorta the pressure produced with in the arterial system is called the systolic blood pressure. In adults, it is about 120mmhg or 16kpa.

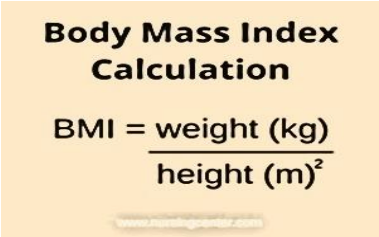
Diastolic pressure: when the heart is resting following the ejection of blood, the pressure with in the arteries is called diastolic blood pressure. In an adult, this is bout 80mmHg or 11kPa. These figures vary according to the time of day, the posture, gender and age of the person. It increases with age and is usually higher in women than in men. In adult males, the average systolic pressure is 120-140 mmHg and an average diastolic pressure is 70-90 mmHg. Blood pressure is measured by sphygmomanometer. It is usually expressed in the following manner B.P=120/80 mmHg. When the blood pressure exceeds the normal value then it is called as Hypertension and if it is less than normal value then that is called as Hypotension.

B.M.I: (Body Mass Index) The weights of the subjects were measured using a weighing machine with minimal clothing. The weight was measured before yoga therapy and after 45 days of yoga therapy. Weight is being measured by using weighing machine.

B.M. I=(Body Mass Index) Calculation 5 and Interpretation

INTERPRETATION	B.M.I(KG)
Underweight	<18.5
Normal	18.5 to 24.9
Overweight	25.0 to 29.9
Obese	30.0 to 34.9
Severely Obese	35.0 to 39.9
Extremely Obese	>40

B.M.I is calculated by using the formula



CASE TAKING: A detailed history of all the subjects under consideration will be noted carefully and good record is maintained to ensure the secrecy. This would be preliminary steps done before carrying out any research. Many aspects like-history of present, past illness, family history, blood pressure, height, weight, lab investigations. This helps to identify the nature of the problem and severity.

Sampling Method and Sample Size Estimated by Statistician. Dr. Satyanarayana

STATISTICAL ANALYSIS

The analysis initiated with the computation of essential descriptive statistics, mean (average) and standard deviation (SD), thereby providing essential insights into the Central tendencies and the dispersion of data within the dataset. Following this, the paired t-test was employed to assess the significance of differences between related groups, offering valuable insights into the impact of interventions or treatments. Later, correction analysis was employed alongside significance tests to refine the understanding of relationships between variables. The use of these tests to refine the understanding of relationships, enhancing the depth and rigor of the research in assessing variable connections. Additionally, analysis of variance (ANOVA) was conducted, followed by the appropriate post hoc tests, such as Tukey's comparison test. ANOVA served as a robust tool to explore variations among multiple groups, and the Tukey's test was employed to pinpoint specific pairwise differences. To facilitate a comprehensive understanding of these findings, bar diagrams were effectively used as powerful visual representation, enhancing the clarity and accessibility of key trends and disparities between groups or categories.

Chapter-5

RESULTS:

Experimental group (Yoga Group)

Mean and Standard deviation for Cholesterol

		Before Yoga	After Yoga
Total Cholesterol	Mean	188.45	171.75
	SD	27.86	23.70
Triglycerides Cholesterol	Mean	192.66	161.07
	SD	50.02	36.77
HDL Cholesterol	Mean	44.02	38.02
	SD	6.40	4.86
LDL Cholesterol	Mean	120.17	103.32
	SD	18.67	17.05
VLDL Cholesterol	Mean	38.82	30.29
	SD	6.16	4.26

The above table shows that individuals with average Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol are high in case of before yoga compared to after yoga.

Paired t test for the comparison of Cholesterol before and after for Yoga Group

Hypothesis:

H_o: The average difference between before Cholesterol and after Cholesterol is 0

H_1: The average difference between before Cholesterol and after Cholesterol is not 0.

Paired t test for the comparison of Cholesterol before and after for Yoga Group

Factors	t statistic	Yoga Group p-value	Decision
Before Total Cholesterol vs After Total cholesterol	9.86	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	Total Cholesterol before more than Total Cholesterol after
Before Triglycerides Cholesterol vs After Triglycerides Cholesterol	13.38	< 0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	Triglycerides Cholesterol before more than Triglycerides Cholesterol after.
Before HDL Cholesterol vs After HDL Cholesterol	19.78	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	HDL Cholesterol before more than HDL Cholesterol after.
Before LDL Cholesterol vs After LDL Cholesterol	21.10	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	LDL Cholesterol before more than LDL Cholesterol after
Before VLDL Cholesterol vs After VLDL Cholesterol	20.54	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	VLDL Cholesterol before more than VLDL Cholesterol after

Since p value of two tailed test is less than 0.05, we reject null hypothesis and concluded that the average difference between before Cholesterol and after Cholesterol is not 0 in case of Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol.

As there is significant difference between Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol before and after, one tailed test is carried out to identify the same.

H_o: The average difference between before Cholesterol and after Cholesterol is 0

H_1: The average Cholesterol of before yoga is greater than after Cholesterol.

The above table shows that p value of the one-tailed test is less than 0.05, we reject the null hypothesis and concluded that on an average all types of Cholesterol levels before yoga is greater than after yoga cholesterol levels which confirms the effectiveness of yoga in reducing all types of Cholesterol.

Correlation of Variables before Yoga - Cholesterol

	TC	TRI	HDL	LDL	VLDL
TC	1				
TRI	0.24	1.00			
HDL	0.20	0.16	1.00		
LDL	0.21	-0.13	0.26*	1.00	
VLDL	0.29*	0.31*	0.22	0.14	1.00

TC- Total Cholesterol; TRI- Triglycerides Cholesterol; HDL- HDL Cholesterol; LDL- LDL Cholesterol; VLDL- VLDL Cholesterol.

Above table shows that

i) LDL is positively associated with HDL Cholesterol

ii) VLDL Cholesterol is positively associated with Total Cholesterol and Triglycerides Cholesterol.

Correlation of Variables after Yoga - Cholesterol

	TC	TRI	HDL	LDL	VLDL.
TC	1				
TRI	0.13				
HDL	0.11	1.00			
LDL	0.10	0.07	1.00		
VLDL	0.09	-0.22	0.16	1.00	

Above table shows that Triglycerides Cholesterol has a significant negative correlation with VLDL Cholesterol.

ANOVA for testing equality of average of before Total Cholesterol between 3 age groups

Hypothesis:

H_o: The averages of before Total Cholesterol between 3 age groups are equal.

H_1: The averages of before Total Cholesterol between 3 age groups are not equal.

ANOVA for testing equality of average of Triglycerides Cholesterol (before) between 3 age groups

Hypothesis:

H_o: The averages of before Triglycerides Cholesterol between 3 age groups are equal.

H_1: The averages of before Triglycerides Cholesterol between 3 age groups are not equal.

ANOVA for testing equality of average of HDL Cholesterol (before) between 3 age groups

Hypothesis:

H_o: The averages of before HDL Cholesterol between 3 age groups are equal.

H_1: The averages of before HDL Cholesterol between 3 age groups are not equal.

ANOVA for testing equality of average of LDL Cholesterol (before) between 3 age groups

Hypothesis:

H_o: The averages of before LDL Cholesterol between 3 age groups are equal.

H_1: The averages of before LDL Cholesterol between 3 age groups are not equal.

ANOVA for testing equality of average of VLDL Cholesterol (before) between 3 age groups

Hypothesis:

H_o: The averages of before VLDL Cholesterol between 3 age groups are equal.

H_1: The averages of before VLDL Cholesterol between 3 age groups are not equal.

Two-way ANOVA Test Results for studying impact of age group on the all types Cholesterol before yoga.

	Before		After	
Variables	F value	P value	F value	P value
Total Cholesterol vs Age group	0.614	0.543	0.337	0.715
Triglycerides Cholesterol vs Age group	0.347	0.708	0.306	0.737
HDL Cholesterol vs Age group	0.151	0.86	0.879	0.419
LDL Cholesterol vs Age group	0.936	0.396	3.31	0.048*
VLDL Cholesterol vs Age group	0.495	0.611	0.084	0.919

*Indicates significant 5 % level of significance

Conclusion:

1. Since p value is greater than 0.05, we accept null hypothesis and concluded that the average of Total Cholesterol, Triglycerides Cholesterol, HDL, LDL Cholesterol and VLDL Cholesterol before yoga between 3 age groups are equal.

2. After Yoga, since p value is greater than 0.05, we accept null hypothesis and concluded that the average of Total Cholesterol, Triglycerides Cholesterol, HDL and VLDL Cholesterol after yoga between 3 age groups are equal.
3. For LDL cholesterol, since p value is less than 0.05, we reject null hypothesis and concluded that at least one of the age groups of average of after LDL Cholesterol is differs from the others. As there is significant difference between averages of LDL Cholesterol after between three age groups test Tukey multiple comparisons of means is carried out to identify the significance of differences between pairs of group means.

Age group	p-values
<40 v/s 40-50	0.68
50-60 v/s < 40	0.048
50-60 v/s 40-50	0.42

There is significant difference between averages of before LDL Cholesterol between <40 and 50-60 age groups.

Experimental group (Yoga Group)

Mean and Standard deviation for BMI

	Before BMI	After BMI
Mean	26.92	26.21
SD	2.91	2.86

The above table shows that individuals with average BMI of 26.92 kg/m^2± 2.91kg/m^2 before yoga and individuals shows average BMI of 26.21 kg/m^2 ± 2.86 kg/m^2 after yoga.

Paired t test for the comparison of BMI before and after for Yoga Group

Hypothesis:

H_o: The average difference between before BMI and after BMI is 0

H_1: The average difference between before BMI and after BMI is not 0

Since p value if two tailed test is less than 0.05, we reject null hypothesis and concluded that the average difference between before BMI and after BMI is not 0. As there is significant difference between BMI before and after, one tailed test is carried out to identify the same.

H_o: The average difference between before BMI and after BMI is 0

H_1: The average BMI of before yoga is greater than BMI after yoga.

Below table shows that p value of one tailed test is less than 0.05, we reject null hypothesis and concluded that average BMI of before yoga is greater than BMI after yoga which confirms the effectiveness of yoga in reducing BMI.

Factors	**t statistic**	**Yoga Group p-value**	**Decision**
Before BMI vs After BMI	15.57	<0.0001 (two tail test)	Difference is significant
		<0.0001 (one tail test)	**BMI before yoga is more than BMI after yoga**

Mean and Standard deviation for BP before and after for Yoga Group

	Before Systolic BP	After Systolic BP	Before Diastolic BP	After Diastolic BP
Mean	136.68	123.36	101.32	82.78
SD	7.19	5.44	10.75	2.49

Observe that average systolic and Diastolic BP of individuals are high in case of before yoga compared to after yoga. Also observe that after yoga both systolic and Diastolic BP are in the normal range (120/80)

Hypothesis:

H_o: The average difference between before BP and after BP is 0

H_1: The average difference between before BP and after BP is not 0

Since p value if two tailed test is less than 0.05, we reject null hypothesis and concluded that the average difference between before BP after BP is not 0 both in case of systolic and diastolic BP.

Further one tailed test shows that average Systolic and Diastolic BP before yoga is greater than Systolic and Diastolic BP after yoga.

Paired t test for the comparison of BP before and after for Yoga Group

From the paired t test shows that there is a significant reduction in both BMI and BP after the yoga which confirms the effectiveness. Observe that there is high variation in BP (both systolic and Diastolic) before yoga and variation stabilizes after yoga (less variation).

Factors	**t statistic**	**p-value**	**Decision**
Before Systolic BP Vs after Systolic BP	17.9003	<0.0001 (two tail test)	Difference is significant
		<0.0001 (one tail test)	before Systolic is more than after Systolic BP
Before Diastolic BP Vs after Diastolic BP	12.30	<0.0001 (two tail test)	Difference is significant
		<0.0001 (one tail test)	before Diastolic BP is more than after Diastolic BP

ANOVA for testing equality of systolic blood pressure (before yoga) in 3 age groups

H_o: The averages of Systolic blood pressure between 3 age groups are equal.
H_1: The averages of before Systolic blood pressure between 3 age groups are not equal.

ANOVA for testing equality of diastolic blood pressure (before) in 3 age groups

H_o: The averages of Diastolic blood pressure between 3 age groups are equal.
H_1: The averages of Diastolic blood pressure between 3 age groups are not equal.

ANOVA for testing equality of BMI (before) in 3 age groups

H_o: The averages of BMI between 3 age groups are equal.
H_1: The averages of BMI between 3 age groups are not equal.

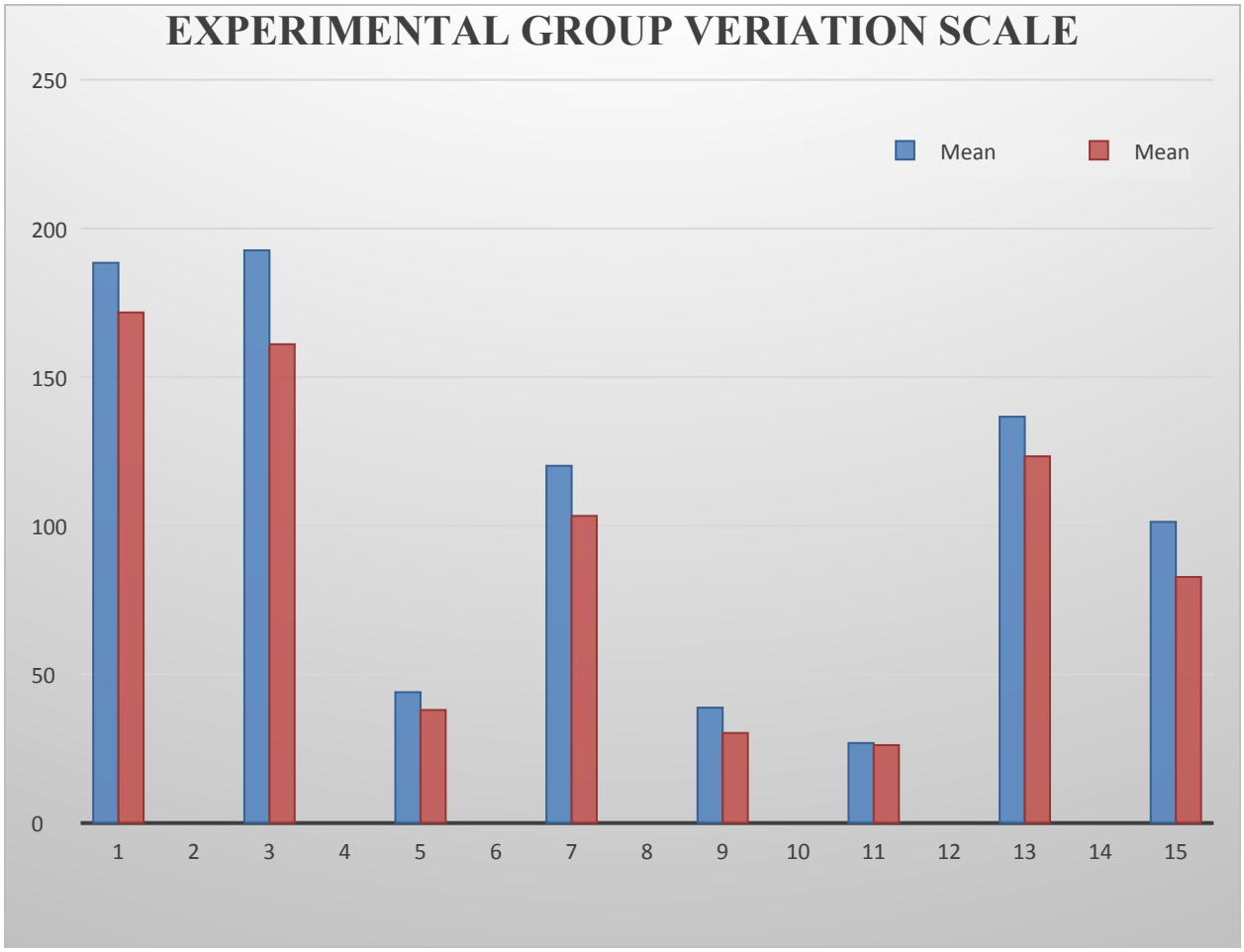
ANOVA Test Results for studying impact of age group on the BP and BMI before and after yoga

Variables	**Before**	**After**

	F value	P value	F value	P value
Systolic vs Age group	2.942	0.0567	0.767	0.467
Diastolic BP vs Age group	2.95	0.0571	1.321	0.271
BMI vs Age group	1.206	0.307	1.025	0.363

Conclusion:

1. Before yoga, since p value greater than 0.05, we accept null hypothesis and concluded that the average diastolic, and BMI of before yoga between 3 age groups are equal.
2. After yoga, since p value greater than 0.05, we accept null hypothesis and concluded that the average diastolic, and BMI of after yoga between 3 age groups are equal.



CONTROL GROUP

Mean and Standard deviation for Cholesterol

		Before period	After period
Total Cholesterol	Mean	173.53	192.87
	SD	22.34	22.88
Triglycerides Cholesterol	Mean	161.46	195.88
	SD	34.98	38.41
HDL Cholesterol	Mean	42.21	46.85
	SD	6.35	5.38
LDL Cholesterol	Mean	106.83	119.98
	SD	15.08	14.41
VLDL Cholesterol	Mean	31.24	39.93
	SD	5.64	11.59

The above table shows that individuals with average Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol are high in case of after period compared to before period. The study result shows that s the time progress Cholesterol levels are increase for control group respondents.

Paired t test for the comparison of Cholesterol before and after period of Control Group

Factors	t statistic	Yoga Group p-value	Decision
Before Total Cholesterol vs After Total Cholesterol	7.70869	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	after Total Cholesterol more than before Total Cholesterol
Before Triglycerides Cholesterol vs After Triglycerides Cholesterol	7.76157	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (Two tail test)	After Triglycerides Cholesterol more than before Triglycerides Cholesterol.
Before HDL Cholesterol vs After HDL Cholesterol	6.31365	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	After HDL Cholesterol more than before HDL Cholesterol.
Before LDL Cholesterol vs After LDL Cholesterol	5.5541	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	After LDL Cholesterol more than before LDL Cholesterol.
Before VLDL Cholesterol vs After VLDL Cholesterol	9.1892	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	After VLDL Cholesterol more than before VLDL Cholesterol.

Since the p value of two tailed test is less than 0.05, we reject null hypothesis and concluded that the average difference between before Cholesterol and after Cholesterol is not 0 in case of Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol.

As there is significant difference between Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol before and after, one tailed test is carried out to identify the same. The below table shows that p values of one tailed test is less than 0.05, we reject null hypothesis and concluded that average all types of Cholesterol of after period is greater than all types of Cholesterol before period.

Correlation of Variables before period - Cholesterol

	TC	TRI	HDL	LDL	VLDL
TC	1				
TRI	0.82	1.00			
HDL	0.05	0.15	1.00		
LDL	0.00	0.12	0.82	1.00	
VLDL	0.28	0.10	-0.11	-0.12	1.00

TC- Total Cholesterol; TRI- Triglycerides Cholesterol; HDL- HDL Cholesterol; LDL- LDL Cholesterol; VLDL- VLDL Cholesterol

Above table shows that

i) Total Cholesterol is positively associated (significant correlation) with Triglycerides Cholesterol
ii) LDL Cholesterol is positively associated (significant correlation) with HDL Cholesterol.

Correlation of Variables after period - Cholesterol

	TC	TRI	HDL	LDL	VLDL.
TC	1				
TRI	0.12	1.00			
HDL	0.16	-0.13	1.00		
LDL	0.17	0.07	0.12	1.00	
VLDL	0.12	0.29	-0.03	0.25	1.00

Above table shows that

i) VLDL Cholesterol is positively associated (significant correlation) with LDL Cholesterol and Triglycerides Cholesterol

Two-way ANOVA Test Results for studying impact of age group on the all-types Cholesterol before and after for control group.

	Before		After	
Variables	F value	P value	F value	P value
Total Cholesterol vs Age group	3.65	0.029	1.34	0.26
Triglycerides Cholesterol vs Age group	0.59	0.55	1.22	0.29
HDL Cholesterol vs Age group	1.88	0.16	0.77	0.46
LDL Cholesterol vs Age group	1.27	0.28	1.92	0.15
VLDL Cholesterol vs Age group	1.9	0.15	1.66	0.32

*Indicates significant 5 % level of significance

Conclusion:

1. Since p value is greater than 0.05, we accept null hypothesis and concluded that the average of Total Cholesterol, Triglycerides Cholesterol, HDL, LDL Cholesterol and VLDL Cholesterol after between 3 age groups are equal.
2. Since p value is greater than 0.05, we accept null hypothesis and concluded that the average of Triglycerides Cholesterol, HDL, LDL Cholesterol and VLDL Cholesterol before between 3 age groups are equal.
3. For total Cholesterol, since p value is less than 0.05, we reject null hypothesis and concluded that at least one of the age groups of average of before Total Cholesterol is differs from the others. As there is significant difference between averages of Total Cholesterol before between three age groups test Tukey multiple comparisons of means is carried out to identify the significance of differences between pairs of group means.

Age group	p-values
<40 v/s 40-50	0.87
< 40 v/s 50-60	0.028
40-50 v/s 50-60	0.34

There is significant difference between averages of before Total Cholesterol between <40 and 50-60 age groups.

Mean and Standard deviation for BMI

	Before BMI	After BMI
Mean	25.09	25.51
SD	2.95	2.98

The above table shows that individuals with average BMI of 25.09kg/m^2± 2.95 kg/m^2 before and individuals shows average BMI of 25.51 kg/m^2 ± 2.98 kg/m^2 after period of control group.

Paired t test for the comparison of BMI before and after period of Control Group

Hypothesis:

H_o: The average difference between before BMI and after BMI is 0

H_1: The average difference between before BMI and after BMI is not

Factors	**t statistic**	**Control Group p-value**	**Decision**
Before BMI vs After BMI	-5.47	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	After BMI is more than before BMI

Since p value if two tailed test is greater than 0.05, we reject null hypothesis and concluded that the average difference between before BMI and after BMI is not 0. From the paired t-test shows that there is a significant increase in BMI after period than before period for control group.

Mean and Standard deviation for BP before and after period of control group

	Before Systolic BP	After Systolic BP	Before Diastolic BP	After Diastolic BP
Mean	124.42	133.66	85.9	96.74
SD	5.81	5.62	10.91	9.83

Observe that average systolic and Diastolic BP of individuals are high in case of after compared to before period of control group.

Paired t test for the comparison of BP before and after period of control group

H_o: The average difference between before BP and after BP is 0

H_1: The average difference between before BP and after BP is not 0

Since p value, if two-tailed test is less than 0.05, we reject null hypothesis and concluded that the average difference between before BP and after BP is not 0 both in the case of systolic and diastolic BP. Further one-tailed test shows that the average Systolic and Diastolic BP after period of control group is greater than Systolic and Diastolic BP before period of control group.

Factors	**t statistic**	**p-value**	**Decision**
Before Systolic BP Vs after Systolic BP	-15.4822	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	after Systolic is more than before Systolic BP
Before Diastolic BP Vs after Diastolic BP	-12.89	<0.0001 (Two tail test)	Difference is significant
		<0.0001 (One tail test)	after Diastolic BP is more than before Diastolic BP

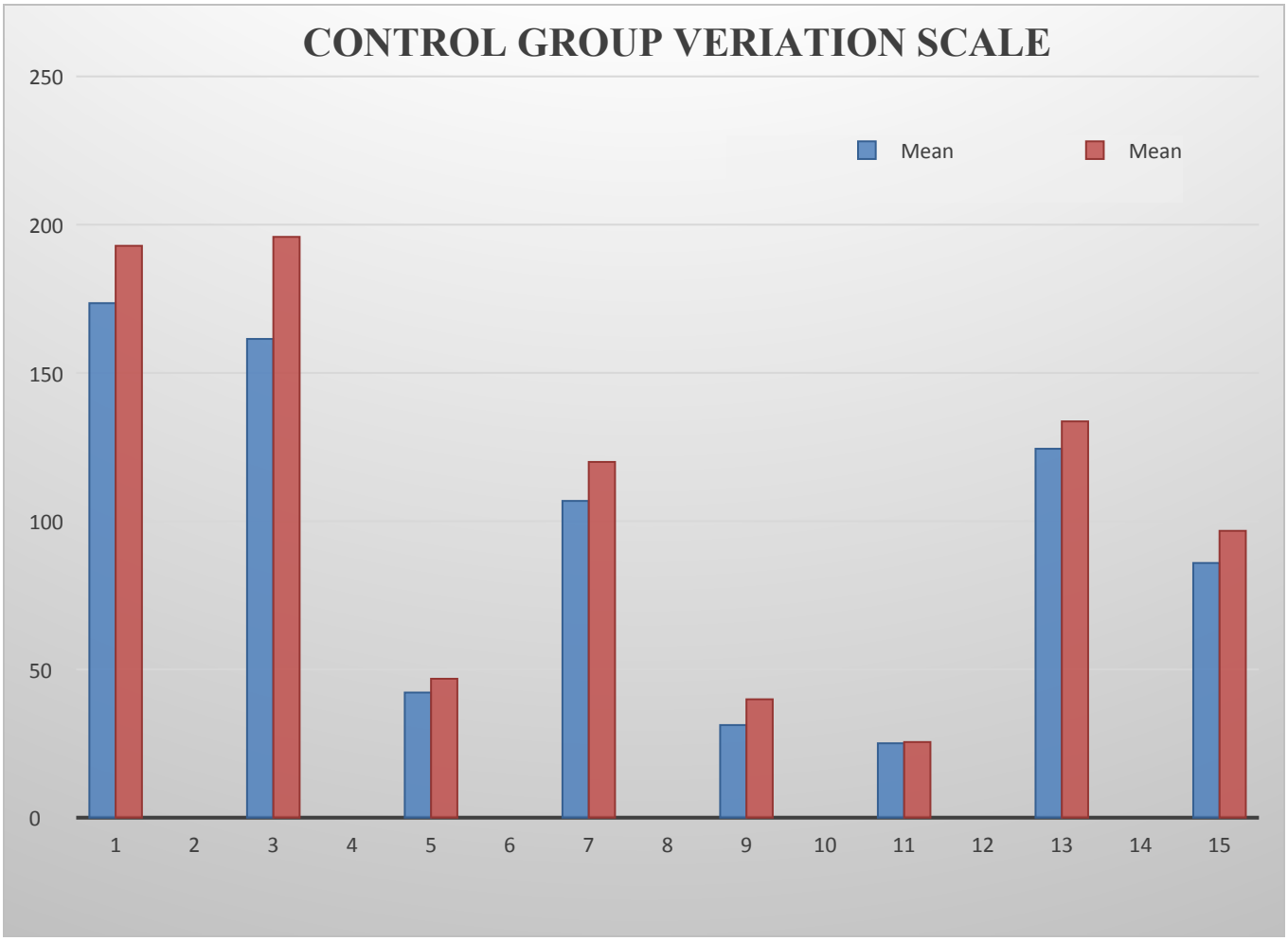
From the paired t-test shows that there is a significant increase in BP after period than before period for control group.

ANOVA Test Results for studying the impact of age group on the BP and BMI before period of control group.

Variables	**Before**		**After**	
	F value	**P value**	**F value**	**P value**
Systolic vs Age group	0.418	0.66	0.147	0.863
Diastolic BP vs Age group	1.633	0.201	1.058	0.351
BMI vs Age group	0.445	0.642	0.759	0.471

Conclusion:

1. Since p value greater than 0.05, we accept null hypothesis and concluded that the average diastolic, Systolic and BMI of before period between 3 age groups are equal for control group.
2. Since p value greater than 0.05, we accept null hypothesis and concluded that the average diastolic, Systolic and BMI of after period between 3 age groups are equal for control group.



DISCURSSION PART:

Showed significant improvement among experimental group when compared to control group. In experimental group individuals with average BMI of 26.92 kg/m^2± 2.91kg/m^2 before yoga and individuals shows average BMI of 26.21 kg/m^2 ± 2.86 kg/m^2 after yoga. Individuals with average BMI of 25.09kg/m^2± 2.95 kg/m^2 before and individuals shows average BMI of 25.51 kg/m^2 ± 2.98 kg/m^2 after period of control group. Lipid Profiles, as p <0.05 the result is significant in Experimental group & non-significant in Control group. Experimental group scale show that Since p value of two tailed test is less than 0.05, As there is significant difference between Total Cholesterol, Triglycerides Cholesterol, HDL Cholesterol, LDL Cholesterol and VLDL Cholesterol, before and after, one tiled test is carried out to identify the same. P values of one tailed test is less than 0.05, we reject null hypothesis and concluded that average all types of

cholesterol levels before yoga is greater than all types of Cholesterol after yoga which confirms the effectiveness of yoga in reducing all types of Cholesterol. Control group Compare to Experimental group, Control group have non-significant Result show that Control group Scale.

OBSERVATION:

The subject was undertaken with the view that Yogic practices strengthen the muscles, relax the body systems. From the observation it was seen that many symptoms of the stress and hypertension. There was an improvement in the hunger levels, sleeping pattern. Most of the subjects were more relaxed and out of the stress symptoms. Just by performing, the systematic practices of Asanas, Pranayama, and Relaxation techniques made them a feeling of relaxation and comfort.

CONCLUSION:

As per the result of present study, it can be concluded that yoga practices can improve the sleep level and reduced the Stress response. So, on this basis yoga practices can be useful at curative, romotive and preventive aspect irrespective to age, sex, religion, region and profession. It works at allover personality of an individual and brings an optimistic attitude at every level of life to take problems as a challenge and deals with them confidentially. If proper lifestyle and food habits included in this kind of study. The much better results can be obtained.

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ಕಮಾಂಡೆಂಟ್ ರವರ ಕಛೇರಿ,

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮೀಸಲು ಪೊಲೀಸ್,

10ನೇ ಪಡೆ, ಶಿಗ್ಗಾವಿ-581205.

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" ಪ್ರಶಂಸನಾ ಪತ್ರ "

ಶ್ರೀ ಮಹೇಶ ಪಾಂಡಪ್ಪ ಲಮಾಣಿ, ಸಂಶೋಧನಾ ವಿಧ್ಯಾರ್ಥಿ, ಯೋಗ ವಿಜ್ಞಾನ ವಿಭಾಗ ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ರವರು ಅಧಿಕ ರಕ್ತದೊತ್ತಡಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಯೋಗ ಶಿಬಿರವನ್ನು ಪಡೆಯ ಸಮುಧಾಯ ಭವನದಲ್ಲಿ ದಿನಾಂಕ:28-12-2021 ರಿಂದ 05-02-2022ರ ವರೆಗೆ 40 ದಿನಗಳ ಕಾಲ ಈ ಘಟಕದ ಅಧಿಕಾರಿ/ಸಿಬ್ಬಂದಿಗಳಿಗೆ ತಮ್ಮ ಆರೋಗ್ಯವನ್ನು ಕಾಪಾಡಿಕೊಳ್ಳುವ ಬಗ್ಗೆ ಪ್ರಾತ್ಯಕ್ಷೆತೆಯ ಯೋಗಾಭ್ಯಾಸದ ತರಬೇತಿಯನ್ನು ಉತ್ತಮವಾಗಿ ನೀಡಿ ಉತ್ತಮ ಭೋದಕರಾಗಿ ಕರ್ತವ್ಯ ನಿರ್ವಹಿಸಿರುವುದನ್ನು ಮುಕ್ತ ಕಂಠದಿಂದ ಪ್ರಶಂಸಿಸಲಾಗಿದೆ.

(ಟಿ. ಸುಂದರ್ ರಾಜು)
ಕಮಾಂಡೆಂಟ್
ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮೀಸಲು ಪೋಲೀಸ್,
10ನೇ ಪಡೆ, ಶಿಗ್ಗಾವಿ.

OFFICE OF THE COMMANDANT 10TH BN. K.S.R.P. GANGEBHAVI, SHIGGAVI DIST HAVERI.

PROCEDURE OF YOGIC PRACTICES.

ASANAS:

1. SWATHIKASANA:

Sit in samasthiti.

1. Exhaling fold the left leg and keep near the root of the right thigh, inhale.
2. Exhaling fold the right leg and place it over the left leg. Hands should be in chinmundra and close the eyes keeping the back straight breath for 5 minutes.
3. Inhaling stretch right leg and exhale.
4. Inhaling stretch left leg.

2. VAJRASANA:

Sit in samasthiti.

1. Exhaling fold both the legs backwards by one side and sit straight on the heels keep the knees close. Place the palms on respective knees look straightforward and breathe for 5 times.
2. Inhaling stretch both the legs together in one side and come to samasthiti.

3. SUPTA VAJRASANA:

Sit in samasthiti.

1. Exhaling fold both the legs backwards by one side and sit straight on the heels. Inhale.
2. Exhaling hold, the big toes with respective hands using thumb middle finger and forefinger of each hand. Inhaling look upwards.

3. Exhaling bend forward and touch the forehead to the ground closing the eyes breathe for 5 times.
4. Inhaling come up and release the hands and exhale.
5. Inhaling stretch both the legs together in one side and come to samasthiti.

4. TADASANA -1:

Stand in samasthiti.

1. Inhaling rise both the hands together straightly upwards by the sides join palms and raise the head look at the palms, do namaskara.
2. Exhaling bring both the hands down and look straight ward. Repeat it for 5 times come to samasthiti.

5. TADASANA-2:

Stand in samasthti.

1. Inhaling rise both the hands looking upwards join the palms.
2. Exhaling bend forwards slowly place the palms adjacent to the foot and touch the forehead to the knee joint.
3. Inhaling slowly come up, looking upwards join the palms.
4. Exhaling bring the hands.

6. TRIKONASANA:

Stand in samathiti.

1. Inhaling raise both the hands parallel to the ground and place the right leg at a distance of one leg to the right side.

2. Exhaling turn right foot to the right side and bend to the right side hold the big toe of the right foot with right hand, gaze at the tip of left hand and breath for 5 times.
3. Inhaling come up with stretched hands parallel to the ground.
4. Exhaling turn left foot to the left side and bend to the left side hold the big toe of the left foot with left hand, gaze at the tip of right hand and breath for 5 times.
5. Inhaling come up with stretched hands parallel to the ground.
6. Exhaling join the legs.

7. PARSHVAKONASANA:

Stand in samathiti.

1. Inhaling simultaneously raise both hands parallel to the ground and simultaneously place the right leg apart at a distance of about one and half leg to the right side.
2. Exhaling turn the right feet to the right side bend the right knee joint making 90-degree angle with ground place the right palm on the right side of the right foot. Stretch the left hand over left ear. Gaze at the tip of the left hand and breathe for 5 times.
3. Inhaling come up turn the right foot forwards come up with both arms stretched parallel to the ground.
4. Exhaling turn the left feet to the left side bend the left knee joint making 90 degree angle with ground place the left palm on the left side of the left foot. Stretch the right hand over right ear. Gaze at the tip of the right hand and breathe for 5 times.
5. Inhaling come up turn the left foot forwards with both arms stretched parallel to ground.
6. Exhaling join the legs.

8. PRASARITHA PADOTTANASANA:

Stand insamasthiti.

1. Inhaling keep the right leg about more then one and halp leg distance towords right side keep the palms ever the respective waist.
2. Exhaling bend forward and keep the palms in bitveen the legs about one foot distance.

3. Inhaling look upword.
4. Exhaling bend forword and keep the crown of the head in between the palms closing eyes breath for 5 times.
5. Inhaling cameup& keep palms over the respective waist.
6. Exhaling join the right leg to left

9. PURVOTTANASANA:

Sit in samasthiti.

1. Inhaling keep the palms straight backwards. Exhale.
2. Inhale lift the whole body head should be back breathe for 5 times.
3. Exhaling bring down the whole body. Inhale.
4. Exhale bring the hands forwards.

10. PAVANAMUKTASANA:

Lie down on the back.

1. Exhaling bend the right leg and bring it near the chest interlock the hands over the right knee.
2. Inhaling lift the head touch the fore head to the right knee joint, the other leg should remain straight on the ground closing the eyes breath 5 times.
3. Exhaling bring down the head on the floor. Release the hands.
4. Inhaling stretch the right leg.
5. Exhaling bend the left leg and bring it near the chest interlock the hands over the left knee.
6. Inhaling lift the head touch the fore head to the left knee, other leg should remain straight on the ground, closing the eyes breathe for5 times.
7. Exhaling bring down the head and release the hands.
8. Inhaling stretch the left leg.
9. Exhaling bend both the legs together and bring it near the chest and

Interlock the hands over both the knees.

10. Inhaling lift the head and touch the fore head to the knees, closing
    The eyes breathe 5 times.
11. Exhaling bring down the head and release the hands.
12. Inhaling stretch both the legs.

11. BHUJANGASANA:

Lie down on the floor, facing down wards. Place the palms exactly below the shoulders.

1. Inhaling lift the head, chest and stomach back look upward and breathe for 5 times.
2. Exhaling bring down the head, chest, stomach relax.

12. SHALABHASANA:

Lie down on the floor, facing down wards join the legs bring the palms, below the respective thighs facing down wards.

1. Inhaling lift both the legs and head together looking upwords breathe for 5tims.
2. Exhaling bring down the head & legs together.

13. DHANURASANA:

Lie down on the stomach.

1. Exhaling bend the knees. Stretch the arms back and hold the ankle with respective hands.
2. Inhaling raise the legs, head and chest together, join the ankles. One should stand on the navel region. Looking upwards breathe for 5 times.
3. Exhaling bring down the head and legs.
4. Inhaling leave the hands and stretch the legs

14. JANUSIRSANA:

Sit in Samasthiti.

1. Sit on the ground with stretched legs.
2. Exhaling fold the left leg and keep the heel in such a way that it should touch the perinium. Inhale there itself.
3. While exhaling hold the right toe, place the forehead on the knee joint. Breathe 5 times.
4. Inhaling release the hands and exhale there itself.
5. Inhaling spread the left leg.
6. Repeat all the procedures in the other side also.

15. MAHAMUDRA:

Sit in samasthiti.

1. Exhaling fold left leg & place it near the perineum, Inhale there it self.
2. Exhaling bend forword&catch the toes of right leg by hands, Inhal.
3. Exhale & do mulabandha.
4. Inhale & do jalandharabandha, look at the middle of the eyebrows. Immidiatlydo uddiyanabandha, hold the breath.
5. Lift the head & exhale, release the Bandhas.
6. Inhaling stretch the left leg.
7. Exhaling fold right leg & keep it near the perinieum, Inhale.
8. Exhaling bend forword& catch the toes of left leg byhands, Inhale.
9. Exhale & do Mulabandha.
10. Inhale & do jalandharabandha& look at the middle of the eyebrows. Immideatly do uddiyanabandha Hold the breath as much as possible.
11. Lift the head & Exhale, release the Bandhas.
12. Inhaling stretch the right leg in frunt.

16. VIPARITAKARANI:

Lie down on the floor in supine position.

1. Inhaling lift the legs and body by the support of palms on the buttocks. Whole body weight should be on shoulder and palms. Closing the eyes breathe for 25 times.
2. Exhaling bring down the legs. Release the hands.

17. UTTANAPADASANA:

Lie down flatly on your back.

1. Inhaling place the forehead on the ground and lift both legs. Simultaneously raise and stretch your hands keeping parallel to the legs. Breathe for five times.
2. Exhaling bring down the legs and head, relax there.

PRANAYAMAS:

1. UJJAYEE:

1. Sit in Swastikasana, hands should be in chinmudra, close the eyes.
2. Keep back straight.
3. Inhale; exhale slowly observing the breath for 21 times.
4. One should concentration on his breathing sound. Slowly open the eyes and sit in Samasthiti.

2. ANULOMA-VILOMA:

Sit in Swastikasana.

Left handshoul be in chin mudra. Right hand in Mrgi mudra.

Close the eyes.

1. Close the right nostril, with right thumb, inhales through left nostril.
2. Close the left nostril with ring & small finger exhale through right nostril.
3. Again, inhale in right & close the right nostril by the right thumb. Exhale through left nostril. This completes one round.
4. Repeat this for 21 times. Slowly open the eyes & sit in Samasthiti.

3. CHANDRA BHEDANA:

Sit in Padmasana/ swastikasana.

1. Exhale fully & perform mulabandha.
2. Inhale through left nostril performsjalandharabandha&uddiyanabandha. Hold the breath (antahkumbhaka) up to one's capacity.
3. Release jalandharabandha& Exhale through left nostril & release the Bandhas. (for piesentBandhas are not includ)

4. BHASTRIKA:

1. Sit in Padmasana. Place the palms on the respective knee with thumb pointing backwards & all other pointing forward.
2. Inhaling deeply. Exhale forcefully with jerks like the bellows of a blacksmith
3. till the feeling of exertion comes.
4. This is one round, go for four more rounds

4. BHRAMARI:

Sit in swastikasana& place the hands in Chinmudra above the kneejoints.

Close the eyes.

1. Inhaling one should produce a Sound resembling the hum of male bee & after performing kumbhaka, one shouldexheld slowly by produsing the very low hum. of a female bee & one shouid concentrate on this Sound.

MEDITATION:

1.PRANAVA:

Sit in padmasana/ swastikasana

1. Close the eyes & hands in chinmudra, pronounce OM, (A, U, MA) for three Matrakala, observe the resonace for three matrakala and tater the Silence for Three matrakala, repeat this for about 20 minuts, later observe the breathing & Slowly open the eyes.

2. SOHAM MEDITATION:

1. Sit in padmasana. Close the eyes. Hands in chin Mudra over the knee.back has to be erect.
2. Inhaling observes the sound 'SO' and 'HAM' while exhaling.
3. End of the inhalation and beginning of exhalation "Omkara' must be observed. Drsti between the eyebrows
4. Inhaling stretch the right leg exhale.
5. Inhaling stretch the left leg.

YOGANIDRA:

- **Preperation:** Lie down on your back on the floor, spread your legs and hands (palms upwards), close your eyes, keep your body in a relaxed state, deeply inhale, exhale completely.
- **Resolve** : Take a firm decision (Sankalpa) mentally ….. I am going to practice yoga nidra, I am not going to sleep … Repeat this to yourself for 3 times (pause)
- **Practice** :

Right side: Right hand, right hand fingers, right thumb, second finger, third finger, fourth finger, fifth finger, right palm, back of the palm, the wrist, the lower arm, the elbow, the shoulder,, the right chest, the right abdomen, the right waist, the right hip, the right thigh, the knee joint, the calf muscle; the ankle, the heel, the sole; the big toe, second toe, third toe, fourth toe, fifth toe.

Left side : Left hand, left hand fingers, left thumb, second finger, third finger, fourth finger, fifth finger, left palm, back of the palm, the wrist, the lower arm, the elbow, the shoulder,, the left chest, the left abdomen, the left waist, the left hip, the left thigh, the knee joint, the calf muscle; the ankle, the heel, the sole; the big toe, second toe, third toe, fourth toe, fifth toe.

Deeply inhale, exhale completely……..

Throat, chin, the right cheek, the left cheek, the lips, nose, tip of the nose, right nostril, left nostril, the eyes, the right eye, the left eye, eyebrows, the right eyebrow, the left eyebrow, the middle of eyebrows, the ears, the right ear, the left ear, the forehead, head, middle of the head. Breathe 3 times there it self.

Top to Bottom : Head, forehead, ears, eyebrows, eyes, nose, lips, facial muscles, chin, neck, chest, navel, shoulders, elbows, wrists, palms, fingers, navel, waist, hips, thighs, knee joints, calf muscles, ankles, heels, soles, toes. Breathe 3 times there it self.

Bottom to Top : Toes, soles, heels, ankles, calf muscles, knee joints, thighs,hips, waist, navel, fingers, palms, wrists, elbows, shoulders, navel, chest, neck, chin, facial muscles, lips, nose, eyes, eyebrows, ears, forehead, head. Breathe 3 times there it self.

Top to Bottom : Head, forehead, ears, eyebrows, eyes, nose, lips, facial muscles, chin, neck, chest, navel, shoulders, elbows, wrist, palms, fingers, navel, waists, hips, thighs, knee joints, calf muscles, ankles, heels, soles, toes. Breathe 3 times there it self.

Counting: Start counting from 1 to 27 and from 27 to 1

Bottom to Navel: Toes, soles, heels, ankles, calf muscles, knee joints, thighs, hips, waist, navel.

Navel Counting: Bring your awareness on the movement of your navel area, (pause). Concentrate on this movement of synchronisation with your breath. (Pause). Now start counting your breath from 1 to 27 (as taught).

Chest Counting : Bring your awareness on the chest area (pause), synchronise it with your breath. (Pause). Now start counting your breath from 27 to 1 (as taught).

Throat Counting: Bring your awareness on the throat area (pause), synchronise it with your breath. (Pause). Now start counting your breath from 1 to 27 (as taught).

Nose Counting: Bring your awareness on the tip of the nose (pause), synchronise it with your breath (pause). Now start counting your breath from 27 to 1 (as taught)

- **Image Visualization**: You are standing in front of the prayer hall (pause), go slowly inside (pause), observe the statue, concentrate on the statue, observe the light, concentrate on the light, (pause); slowly come out from the prayer hall.
- **End** : Draw your mind outside and become aware of your breathing, aware of your whole body, from top to bottom, become aware of your floor, room, join your legs, close your hands, slowly open your eyes…….(stay for 1 minute), get up slowly.

7.5. Photographs of Practical Session

SVASTIKASANA

VAZRASANA

PRASARITAPADOTTANASANA

PURVOTTANASANA

DHANURASANA

JANUSHIRSHASANA

PAVANAMUKTANA SANA

BHUJANGASANA

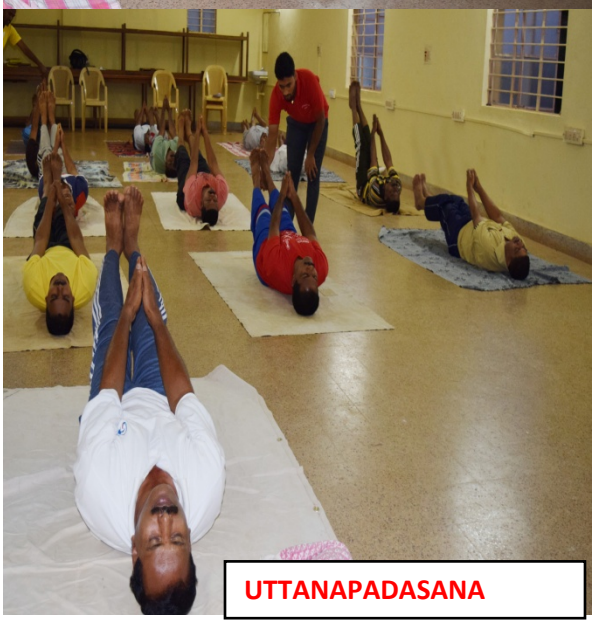
SHALABASANA

UJJAYI PRANAYAMA

CHENDRABEDANA PRANAYAMA

MAHAMUDRA

VIPAREETAKARANI



UTTANAPADASANA

ANULOMA-VILOMAPRANAYAMA

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